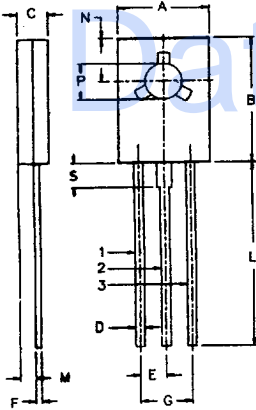
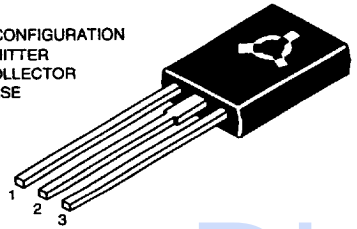


BD233, 235, 237 NPN PLASTIC POWER TRANSISTORS
BD234, 236, 238 PNP PLASTIC POWER TRANSISTORS
Medium Power Liner and Switching Applications

PIN CONFIGURATION
1. EMITTER
2. COLLECTOR
3. BASE



DIM	MIN.	MAX.
A	7.4	7.8
B	10.5	10.8
C	2.4	2.7
D	0.7	0.9
E	2.25 TYP.	
F	0.49	0.75
G	4.5 TYP.	
L	15.7 TYP.	
M	1.27 TYP.	
N	3.75 TYP.	
P	3.0	3.2
S	2.5 TYP.	

ALL DIMENSIONS IN MM

ABSOLUTE MAXIMUM RATINGS

		233	235	237	
		234	236	238	
Collector-base voltage (open emitter)	V_{CBO}	max. 45	60	100	V
Collector-emitter voltage (open base)	V_{CEO}	max. 45	60	80	V
Collector current	I_C	max.	2.0		A
Total power dissipation up to $T_C = 25^\circ C$	P_{tot}	max.	25		W
Junction temperature	T_j	max.	150		$^\circ C$
Collector-emitter saturation voltage					
$I_C = 1 A; I_B = 0.1 A$	V_{CEsat}	max.	0.6		V
D.C. current gain					
$I_C = 150 mA; V_{CE} = 2 V$	h_{FE}	min.	40		

RATINGS (at $T_A=25^\circ\text{C}$ unless otherwise specified)

Limiting values			233	235	237	
			234	236	238	
Collector-base voltage (open emitter)	V_{CBO}	max.	45	60	100	V
Collector-emitter voltage (open base)	V_{CEO}	max.	45	60	80	V
Collector-emitter voltage ($R_{BE} = 1\text{K}\Omega$)	V_{CER}	max.	45	60	100	V
Emitter-base voltage (open collector)	V_{EBO}	max.		5.0		V
Collector current	I_C	max.		2.0		A
Collector current (peak value)	I_{CM}	max.		6.0		A
Total power dissipation up to $T_C = 25^\circ\text{C}$	P_{tot}	max.		25		W
Junction temperature	T_j	max.		150		$^\circ\text{C}$
Storage temperature	T_{stg}			-65 to +150		$^\circ\text{C}$

THERMAL RESISTANCE

From junction to case	$R_{th\ j-c}$			5.0		$^\circ\text{C}/\text{W}$
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CHARACTERISTICS

$T_{amb} = 25^\circ\text{C}$ unless otherwise specified

			233	235	237	
			234	236	238	
Collector cutoff current						
$I_E = 0; V_{CB} = 45\text{ V}$	I_{CBO}	max.	100	-	-	μA
$I_E = 0; V_{CB} = 60\text{ V}$	I_{CBO}	max.	-	100	-	μA
$I_E = 0; V_{CB} = 100\text{ V}$	I_{CBO}	max.	-	-	100	μA
$I_E = 0; V_{CB} = 45\text{ V}; T_C = 150^\circ\text{C}$	I_{CBO}	max.	2.0	-	-	mA
$I_E = 0; V_{CB} = 60\text{ V}; T_C = 150^\circ\text{C}$	I_{CBO}	max.	-	2.0	-	mA
$I_E = 0; V_{CB} = 100\text{ V}; T_C = 150^\circ\text{C}$	I_{CBO}	max.	-	-	2.0	mA
Emitter cut-off current						
$I_C = 0; V_{EB} = 5\text{ V}$	I_{EBO}	max.		1.0		mA
Breakdown voltages						
$I_C = 0.1\text{ A}; I_B = 0$	$V_{CEO(sus)}^*$	min.	45	60	80	V
$I_C = 1\text{ mA}; I_E = 0$	V_{CBO}	min.	45	60	100	V
$I_E = 1\text{ mA}; I_C = 0$	V_{EBO}	min.		5.0		V
Saturation voltage						
$I_C = 1\text{ A}; I_B = 0.1\text{ A}$	V_{CEsat}^*	max.		0.6		V
Base-emitter on voltage						
$I_C = 1\text{ A}; V_{CE} = 2\text{ V}$	$V_{BE(on)}^*$	max.		1.3		V
D.C. current gain						
$I_C = 150\text{ mA}; V_{CE} = 2\text{ V}$	h_{FE}^*	min.		40		
$I_C = 1\text{ A}; V_{CE} = 2\text{ V}$	h_{FE}^*	min.		25		
Transition frequency						
$I_C = 250\text{ mA}; V_{CE} = 10\text{ V}$	f_T	min.		3.0		MHz

* Pulse test: pulse duration = 300 μs ; duty cycle $\leq 1.5\%$.